

## Description

The 74LVC2G34 is a dual buffer gate with standard push - pull outputs. The device is designed for operation with a power supply range of 1.65V to 5.5V. The inputs are tolerant to 5.5V allowing this device to be used in a mixed voltage environment. The device is fully specified for partial power down applications using I<sub>OFF</sub>. The I<sub>OFF</sub> circuitry disables the output preventing damaging current backflow when the device is powered down.

The gate performs the positive Boolean function:

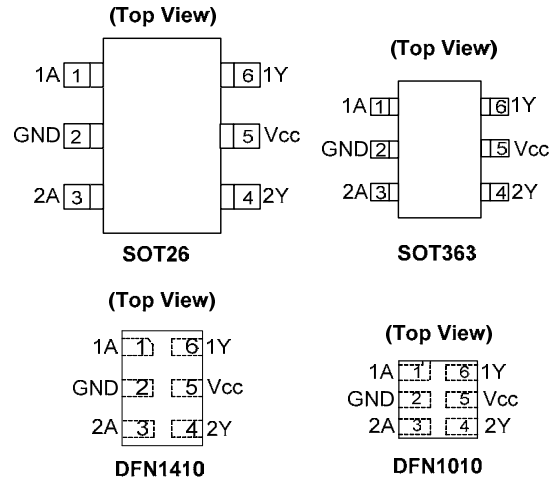
$$Y = A$$

## Features

- Wide Supply Voltage Range from 1.65V to 5.5V
- ±24mA Output Drive at 3.0V
- CMOS low power consumption
- IOFF Supports Partial-Power-Down Mode Operation
- Inputs accept up to 5.5V
- ESD Protection Tested per JESD 22
  - Exceeds 200-V Machine Model (A115-A)
  - Exceeds 2000-V Human Body Model (A114-A)
  - Exceeds 1000-V Charged Device Model (C101)
- Latch-Up Exceeds 100mA per JESD 78, Class II
- Range of Package Options
- SOT26, SOT363, DFN1410, and DFN1010 Available in “Green” Molding Compound (no Br, Sb)
- Lead Free Finish/ RoHS Compliant (Note 1)

Notes: 1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied. Please visit our website at [http://www.diodes.com/products/lead\\_free.html](http://www.diodes.com/products/lead_free.html).

## Pin Assignments



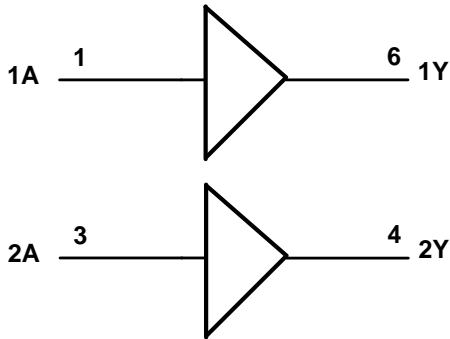
## Applications

- Voltage Level Shifting
- General Purpose Logic
- Power Down Signal Isolation
- Wide array of products such as:
  - PCs, networking, notebooks, netbooks, PDAs
  - Computer peripherals, hard drives, CD/DVD ROM
  - TV, DVD, DVR, set top box
  - Cell Phones, Personal Navigation / GPS
  - MP3 players, Cameras, Video Recorders

**Pin Descriptions**

Pin Name	Pin NO.	Description
1A	1	Data Input
GND	2	Ground
2A	3	Data Input
2Y	4	Data Output
V <sub>CC</sub>	5	Supply Voltage
1Y	6	Data Output

**Logic Diagram**



**Function Table**

Inputs	Output
A	Y
H	H
L	L

### Absolute Maximum Ratings (Note 2)

Symbol	Description	Rating	Unit
ESD HBM	Human Body Model ESD Protection	2	KV
ESD CDM	Charged Device Model ESD Protection	1	KV
ESD MM	Machine Model ESD Protection	200	V
V <sub>CC</sub>	Supply Voltage Range	-0.5 to 6.5	V
V <sub>I</sub>	Input Voltage Range	-0.5 to 6.5	V
V <sub>O</sub>	Voltage applied to output in high impedance or I <sub>OFF</sub> state	-0.5 to 6.5	V
V <sub>O</sub>	Voltage applied to output in high or low state.	-0.3 to V <sub>CC</sub> +0.5	V
I <sub>IK</sub>	Input Clamp Current V <sub>I</sub> <0	-50	mA
I <sub>OK</sub>	Output Clamp Current	-50	mA
I <sub>O</sub>	Continuous output current	±50	mA
	Continuous current through V <sub>DD</sub> or GND	±100	mA
T <sub>J</sub>	Operating Junction Temperature	-40 to 150	°C
T <sub>STG</sub>	Storage Temperature	-65 to 150	°C

Notes: 2. Stresses beyond the absolute maximum may result in immediate failure or reduced reliability. These are stress values and device operation should be within recommend values.

### Recommended Operating Conditions (Note 3)

Symbol	Parameter	Min	Max	Unit	
V <sub>CC</sub>	Operating Voltage	Operating	1.65	5.5	V
		Data retention only	1.5		V
V <sub>IH</sub>	High-level Input Voltage	V <sub>CC</sub> = 1.65V to 1.95V	0.65 X V <sub>CC</sub>		V
		V <sub>CC</sub> = 2.3V to 2.7V	1.7		
		V <sub>CC</sub> = 3V to 3.6V	2		
		V <sub>CC</sub> = 4.5V to 5.5V	0.7 X V <sub>CC</sub>		
V <sub>IL</sub>	Low-level input voltage	V <sub>CC</sub> = 1.65V to 1.95V		0.35 X V <sub>CC</sub>	V
		V <sub>CC</sub> = 2.3V to 2.7V		0.7	
		V <sub>CC</sub> = 3V to 3.6V		0.8	
		V <sub>CC</sub> = 4.5V to 5.5V		0.3 X V <sub>CC</sub>	
V <sub>I</sub>	Input Voltage	0	5.5	V	
V <sub>O</sub>	Output Voltage	0	V <sub>CC</sub>	V	
I <sub>OH</sub>	High-level output current	V <sub>CC</sub> = 1.65V		-4	mA
		V <sub>CC</sub> = 2.3V		-8	
		V <sub>CC</sub> = 3V		-16	
		V <sub>CC</sub> = 4.5V		-24	
I <sub>OL</sub>	Low-level output current	V <sub>CC</sub> = 1.65V		4	mA
		V <sub>CC</sub> = 2.3V		8	
		V <sub>CC</sub> = 3V		16	
		V <sub>CC</sub> = 4.5V		24	
				32	

### Recommended Operating Conditions (cont.) (Note 3)

Symbol	Parameter	Min	Max	Unit
$\Delta t/\Delta V$	Input transition rise or fall rate	$V_{CC} = 1.8V \pm 0.15V, 2.5V \pm 0.2V$		20
		$V_{CC} = 3.3V \pm 0.3V$		10
		$V_{CC} = 5V \pm 0.5V$		5
$T_A$	Operating free-air temperature	-40	125	$^{\circ}C$

Notes: 3. Unused inputs should be held at  $V_{CC}$  or Ground.

### Electrical Characteristics

Symbol	Parameter	Test Conditions	$V_{CC}$	40°C to 85°C		-40°C to 125°C		Unit
				Min	Max	Min	Max	
$V_{OH}$	High Level Output Voltage	$I_{OH} = -100\mu A$	1.65V to 5.5V	$V_{CC} - 0.1$		$V_{CC} - 0.1$		V
		$I_{OH} = -4mA$	1.65V	1.2		0.95		
		$I_{OH} = -8mA$	2.3V	1.9		1.7		
		$I_{OH} = -16mA$	3V	2.4		1.9		
		$I_{OH} = -24mA$		2.3		2.0		
		$I_{OH} = -32mA$	4.5V	3.8		3.4		
$V_{OL}$	Low Level Output Voltage	$I_{OL} = 100\mu A$	1.65V to 5.5V		0.1		0.1	V
		$I_{OL} = 4mA$	1.65V		0.45		0.70	
		$I_{OL} = 8mA$	2.3V		0.3		0.45	
		$I_{OL} = 16mA$	3V		0.4		0.60	
		$I_{OL} = 24mA$			0.55		0.80	
		$I_{OL} = 32mA$	4.5V		0.55		0.80	
$I_I$	Input Current	$V_I = 5.5V$ or GND	0 to 5.5V		$\pm 5$		$\pm 20$	$\mu A$
$I_{OFF}$	Power Down Leakage Current	$V_I$ or $V_O = 5.5V$	0		$\pm 10$		$\pm 20$	$\mu A$
$I_{CC}$	Supply Current	$V_I = 5.5V$ of GND $I_O = 0$	1.65V to 5.5V		10		40	$\mu A$
$\Delta I_{CC}$	Additional Supply Current	Input at $V_{CC} - 0.6V$	3V to 5.5V		500		5000	$\mu A$

### Package Characteristics (All typical values are at $V_{CC} = 3.3V$ , $T_A = 25^\circ C$ )

Symbol	Parameter	Test Conditions	$V_{CC}$	Min	Typ.	Max	Unit
$C_I$	Input Capacitance	$V_I = V_{CC} - \text{or GND}$	3.3		3.5		pF
$\theta_{JA}$	Thermal Resistance Junction-to-Ambient	SOT26	(Note 4)		204		$^\circ C/W$
		SOT363			371		
		DFN1410			430		
		DFN1010			510		
$\theta_{JC}$	Thermal Resistance Junction-to-Case	SOT26	(Note 4)		52		$^\circ C/W$
		SOT363			143		
		DFN1410			190		
		DFN1010			250		

Notes: 4. Test condition for SOT26, SOT363, DFN1410 and DFN1010 : Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

### Switching Characteristics

$T_A = -40^\circ\text{C}$  to  $85^\circ\text{C}$ ,  $CL = 30$  or  $50\text{pF}$  (see Figure 1)

Parameter	From (Input)	TO (OUTPUT)	$V_{CC} = 1.8\text{V} \pm 0.15\text{V}$		$V_{CC} = 2.5\text{V} \pm 0.2\text{V}$		$V_{CC} = 3.3\text{V} \pm 0.3\text{V}$		$V_{CC} = 5\text{V} \pm 0.5\text{V}$		Unit
			Min	Max	Min	Max	Min	Max	Min	Max	
$t_{pd}$	A	Y	0.5	8.6	0.5	4.4	0.5	4.1	0.5	3.2	ns

$T_A = -40^\circ\text{C}$  to  $125^\circ\text{C}$ ,  $CL = 30$  or  $50\text{pF}$  (see Figure 1)

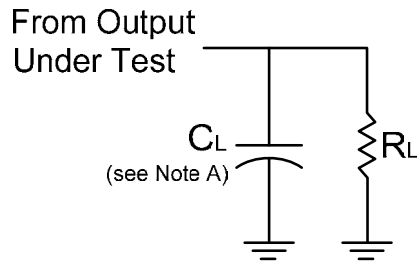
Parameter	From (Input)	TO (OUTPUT)	$V_{CC} = 1.8\text{V} \pm 0.15\text{V}$		$V_{CC} = 2.5\text{V} \pm 0.2\text{V}$		$V_{CC} = 3.3\text{V} \pm 0.3\text{V}$		$V_{CC} = 5\text{V} \pm 0.5\text{V}$		Unit
			Min	Max	Min	Max	Min	Max	Min	Max	
$t_{pd}$	A	Y	0.5	10.8	0.5	5.5	0.5	5.1	0.5	4.0	ns

### Operating Characteristics

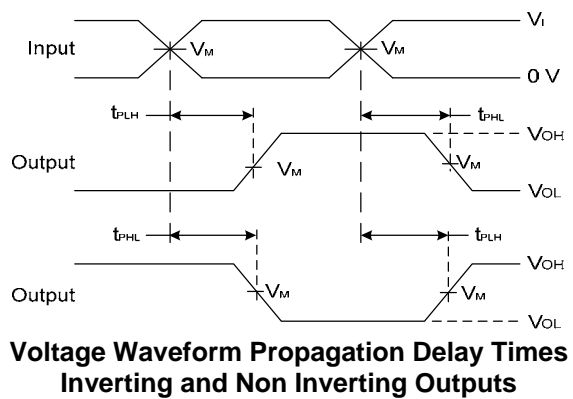
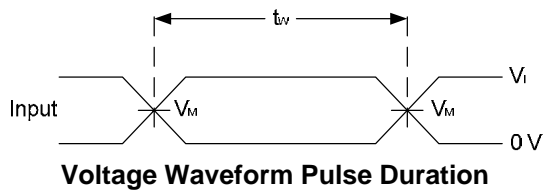
$T_A = 25^\circ\text{C}$

Parameter		Test Conditions	$V_{CC} = 1.8\text{V}$	$V_{CC} = 2.5\text{V}$	$V_{CC} = 3.3\text{V}$	$V_{CC} = 5\text{V}$	Unit
			Typ.	Typ.	Typ.	Typ.	
$C_{pd}$	Power dissipation capacitance	$f = 10\text{ MHz}$	17	19	20	21	pF

**Parameter Measurement Information**



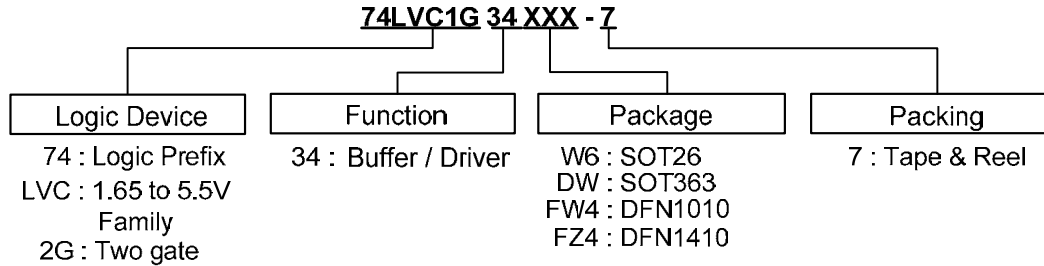
V <sub>CC</sub>	Inputs		V <sub>M</sub>	C <sub>L</sub>	R <sub>L</sub>
	V <sub>I</sub>	t <sub>r</sub> /t <sub>f</sub>			
1.8V±0.15V	V <sub>CC</sub>	≤2ns	V <sub>CC</sub> /2	30 pF	1 KΩ
2.5V±0.2V	V <sub>CC</sub>	≤2ns	V <sub>CC</sub> /2	30 pF	500 Ω
3.3V±0.3V	3 V	≤2.5ns	1.5 V	50 pF	500 Ω
5V±0.5V	V <sub>CC</sub>	≤2.5ns	V <sub>CC</sub> /2	50 pF	500 Ω







**Figure 1. Load Circuit and Voltage Waveforms**

- Notes:
- A. Includes test lead and test apparatus capacitance.
  - B. All pulses are supplied at pulse repetition rate ≤ 10 MHz.
  - C. Inputs are measured separately one transition per measurement.
  - D. t<sub>PLH</sub> and t<sub>PHL</sub> are the same as t<sub>PD</sub>.

**Ordering Information**

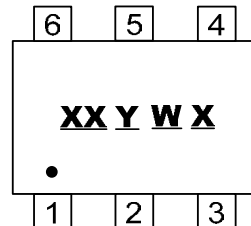


Device	Package Code	Packaging (Note 5)	7" Tape and Reel	
			Quantity	Part Number Suffix
 74LVC2G34W6-7	W6	SOT26	3000/Tape & Reel	-7
 74LVC2G34DW-7	DW	SOT363	3000/Tape & Reel	-7
 74LVC2G34FW4-7	FW4	DFN1010	5000/Tape & Reel	-7
 74LVC2G34FZ4-7	FZ4	DFN1410	5000/Tape & Reel	-7

Notes: 5. Pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>  
 6. The taping orientation is located on our website at <http://www.diodes.com/datasheets/ap02007.pdf>

**Marking Information**

**(1) SOT26, SOT363**

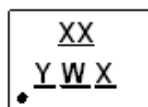


**XX** : Identification code  
**Y** : Year 0~9  
**W** : Week : A~Z : 1~26 week;  
 a~z : 27~52 week; z represents 52 and 53 week  
**X** : A~Z : Internal Code

Part Number	Package	Identification Code
74LVC2G34W6	SOT26	Z7
74LVC2G34DW	SOT363	Z7

**(2) DFN1010, DFN1410**

**(Top View)**

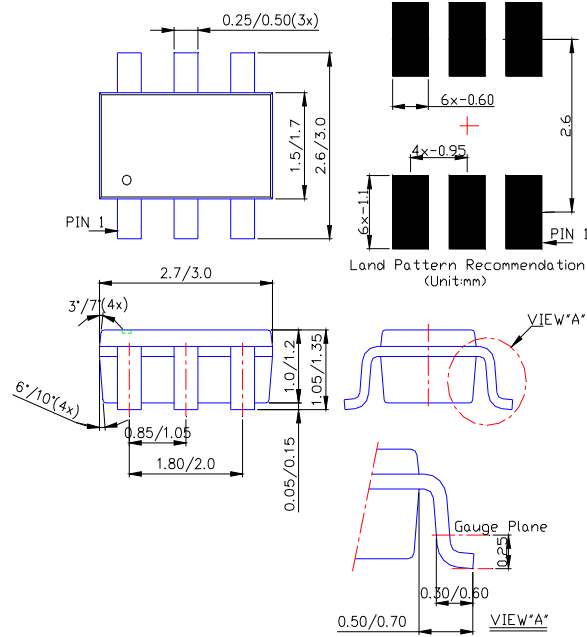


**XX** : Identification Code  
**Y** : Year : 0~9  
**W** : Week : A~Z : 1~26 week;  
 a~z : 27~52 week; z represents 52 and 53 week  
**X** : A~Z : Internal code

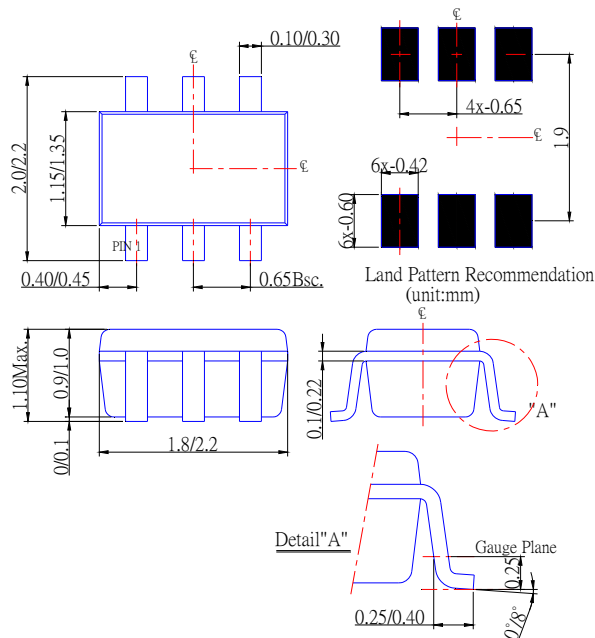
Part Number	Package	Identification Code
74LVC2G34FW4	DFN1010	Z7
74LVC2G34FZ4	DFN14010	Z7

**Package Outline Dimensions (All Dimensions in mm)**

**(1) Package Type: SOT26**

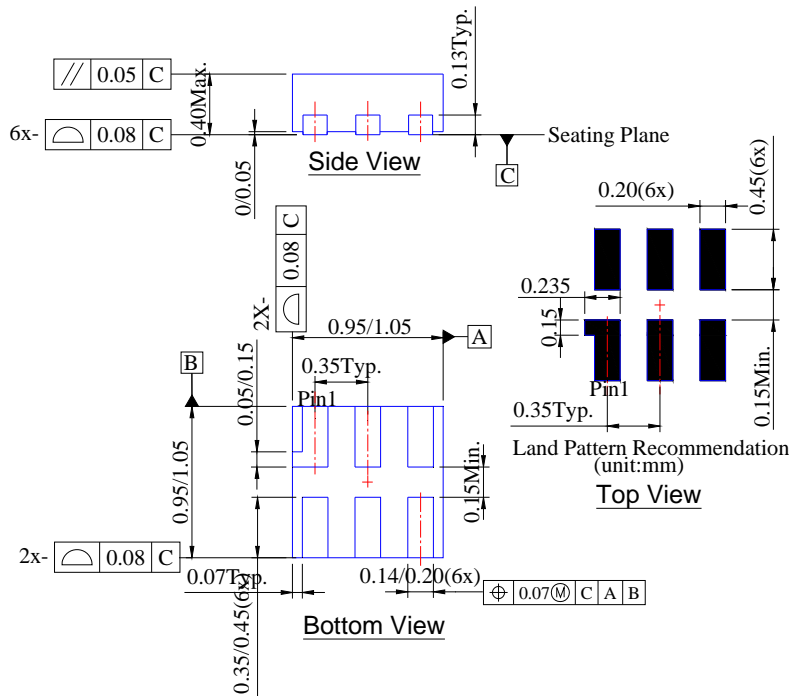


**(2) Package Type: SOT363**

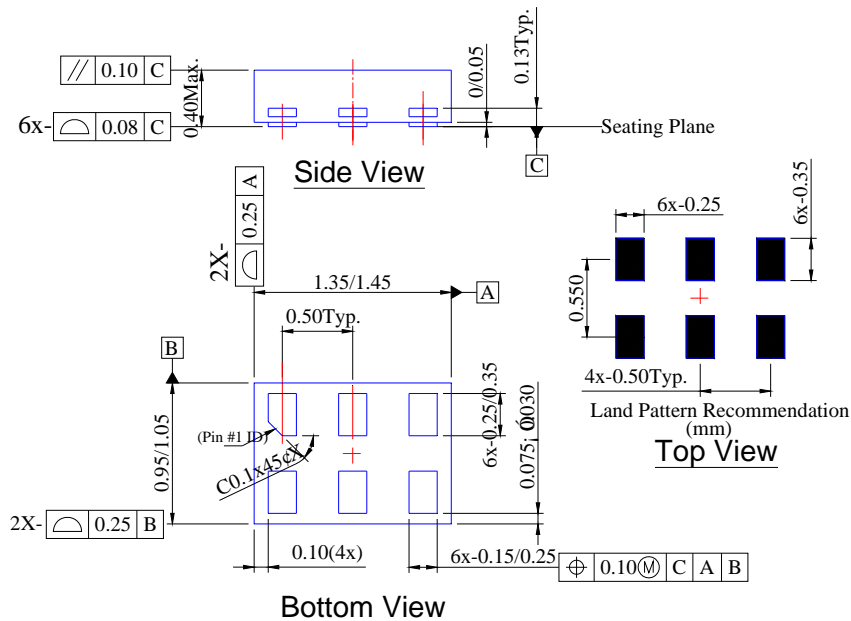


**Package Outline Dimensions (All Dimensions in mm)**

**(3) Package Type: DFN1010**



**(4) Package Type DFN1410**



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